

Testimony of Jim Bruce

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UPS

To the United States Joint Economic Committee

Hearing on “The Economic Impact of Increased Natural Gas Production”

216 Hart Senate Office Building

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Vice Chair Klobuchar, Chairman Brady, and Members of the Committee

Thank you for the opportunity to testify on the economic impact of increased natural gas production as seen from UPS’s vantage point. Natural gas is revolutionizing trucking, especially heavy-duty trucking, for UPS and the rest of the industry, creating domestic jobs, and offering the promise of lower transportation costs and a cleaner environment. To appreciate just how important natural gas production is to UPS today requires some history.

Our company began in Seattle in 1907, over a century ago, as couriers of messages, not packages, couriers on foot with a few bicycles. We graduated to motorcycles, but six years elapsed before the company purchased its first truck, a Model-T Ford. As the telephone gradually displaced message couriers, the company reinvented itself and began delivering customers’ packages for department stores. Over the next three quarters of a century, UPS acquired more and more trucks, eventually an aircraft fleet, and became ever more dependent on petroleum. (I should mention that we acquired a fleet of plug-in electric trucks for New York City in the 1930’s, but gradually retired them.) This petroleum dependence brought two problems. The first was vulnerability to petroleum supply disruptions, higher oil prices, and especially to the volatility of those prices. Even today, we reflect this as a business risk in our financial reports.

The second problem was that the proliferation of motor vehicles, among other sources, created air pollution, especially in urban areas. Remember that there were no significant emission controls on trucks until 2007. Compared to diesel fuel, natural gas, actually compressed natural gas (“CNG”) offered an inherently cleaner, domestically sourced fuel and at times natural gas was cheaper than petroleum. Beginning in the 1980’s, UPS began testing medium-sized delivery trucks that operated on natural gas.

In short, UPS spent its first 80 years growing our dependence on petroleum, but the last 30 years trying to move gradually away from petroleum, to fuels that are cleaner and cheaper than refined petroleum products. We currently have nearly 100,000 trucks worldwide, some 17,000 heavy tractor trailers in the U.S. alone, and about 60,000 package delivery trucks. In fact, we are now the world’s largest package carrier.

In these last 30 years, we tested in service several alternative fuels and advanced technologies in what we call our “rolling laboratory” seeking ways to reduce our use of petroleum and emissions. That included electricity, hybrids (both electric and hydraulic hybrids), propane, and of course natural gas. The chart included in my testimony is a snapshot, dated April 16, 2014, of this “rolling laboratory” of over 2,300 vehicles domestically and a total of over 3,400 worldwide. From just 2010 through what we plan to spend in 2014, UPS has committed over \$400 million on this alternative fuel fleet and its infrastructure in the U.S. and Canada. Since 2000, these alternative fuel vehicles have traveled more than 300 million miles, the average distance from Earth to Mars.... And back. By the end of 2017, we expect that fleet to have traveled a billion miles.

Global Alternative Fuel and Advanced Technology Vehicles

Total Alternative Tech Vehicles (U.S. & International): 3,437

U.S. Alternative Tech Fleet: 2,378 (+301)

- Compressed Natural Gas Vehicles: 939 (+62)
- Hybrid Electric Vehicles: 380
- Liquid Natural Gas Vehicles: 488 (+239)
- Propane Vehicles: 28
- Electric Vehicles: 102
- Hydraulic Hybrid Vehicles: 41
- Composite Body Diesel: 400



International Alternative Tech Fleet: 1,059 (-6)



- Compressed Natural Gas Vehicles: 85 (-3)
- Hybrid Electric Vehicles: 6
- Propane Vehicles: 847 (+1)
- Electric Vehicles: 56
- Ethanol Vehicles: 46 (-4)
- Biomethane Vehicles: 19

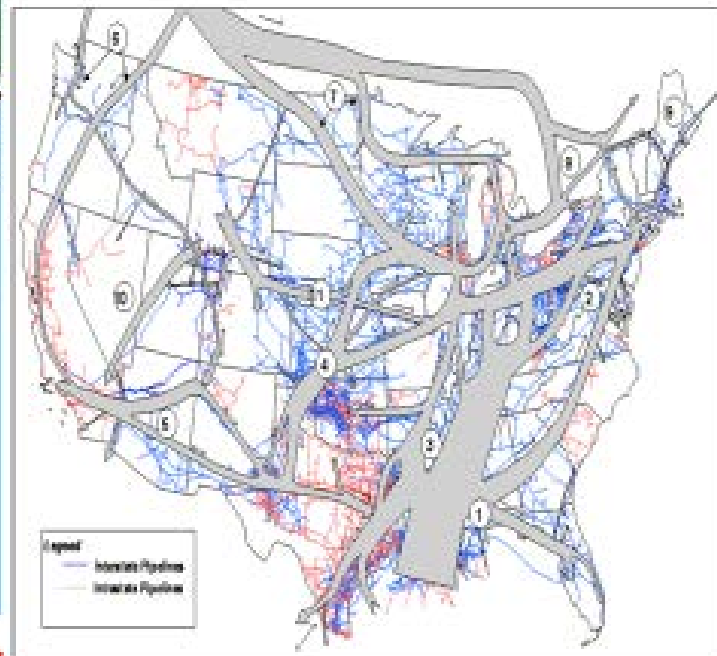
So with all these alternative fuel options available to UPS, why did we end up zeroing in on natural gas as a key alternative fuel for UPS? The largest segment of our alternative fuel fleet is powered by natural gas, and is our primary focus these days.

First, we quickly realized that theoretically the best candidate for conversion to alternative fuels was the large, over-the-road heavy truck, the tractor trailer, because they use far more fuel than our small delivery trucks. Our big rigs travel an average of 450 miles per day and can consume 100 gallons per day, as compared to a package delivery vehicle that might burn only a tenth of that much diesel fuel per day. Alternative fuel vehicles nearly always cost more to purchase than conventional vehicles and so the more diesel fuel you displace with the cheaper alternative fuel, the more savings there are to pay the higher upfront cost of that alternative fuel vehicle.

While there were several alternative fuels suitable for the small delivery trucks, for these big rigs, the semis, we found at first that we had no alternative fuel to give us the range and power that diesel fuel provided and that we required. Not electricity, not propane, not hybrids, not even CNG at first. However, around 2000, diesel engines became available that ran on cryogenically-cooled liquid natural gas (LNG) and a small amount of diesel fuel to ignite the combustion in the engine. This dual-fuel engine worked well. In fact, in 2002, UPS began in-service use of 11 of these LNG/diesel powered tractors, as a part of our “rolling laboratory” and has had a growing fleet of these LNG trucks ever since. We thought the availability of heavy LNG tractor trailers significant enough that our CEO wrote the Secretary of Energy stating that the LNG tractor meant that we had now at least one suitable alternative fuel for each type of truck, including the big over-the-road semis.

But there was a problem, and this is where the natural gas production that the U.S. enjoys today became critically important. The early switch to natural gas vehicles fizzled when natural gas prices surged around 2005-2006. We and others lost confidence that natural gas would remain low enough in cost to become a viable alternative vehicle fuel. However, the enormous expansion in U.S. natural gas production and natural gas reserves created new confidence that natural gas prices will stay much lower than diesel prices, perhaps for decades to come and instead, natural gas has proven a much cheaper and inherently cleaner fuel than diesel or gasoline. This anticipated price stability and other factors has led UPS to shift to natural gas as a fuel and justify paying the considerable extra cost of limited production natural gas vehicles. New engine designs coming on the market today permit the heavy trucks to run on CNG with tolerable performance reductions, as compared to LNG powered trucks. Natural gas (LNG or CNG) remains the only major commercial alternative to diesel for the heavy trucks.

As an aside, it is convenient how the major routes for heavy trucks co-inside with the major natural gas pipeline flows within the United States. The chart below shows this:



Source: Energy Information Administration, Office of Oil and Gas, Natural Gas Division, Coal/Truck Gas Transportation Information System.

Thanks to the surge in natural gas production and reduced prices, natural gas in the U.S. is significantly less expensive than crude oil on an energy equivalent basis. Many cite specific per gallon equivalent cost figures for natural gas, but there is wide variation geographically and generalization is difficult. Yet consider that natural gas at \$5 per MMBTU is equivalent to crude oil at \$29 per barrel, well below oil's current market price. This price gap is narrowed, however, as it costs more to convert natural gas to a transportation fuel (CNG or LNG), there are additional specialized fueling infrastructure costs, and finally the alternative fuel vehicles themselves are more expensive. That price gap between natural gas prices and crude oil is what will determine how fast transportation turns to

natural gas as a fuel. Understand that UPS paid over \$4 billion last year for fuel overall and you see why natural gas matters to us.

UPS, as an industry leader and, we hope, a thought leader, is making significant investments and commitment to natural gas. We already have more than 1,000 CNG medium “package cars” and over the next year UPS will buy nearly 1,000 heavy over-the-road tractors that run on LNG with a few running on CNG. In fact, in 2014, the only new tractors that UPS will purchase for its domestic small package delivery business will run on natural gas. This will in one year nearly double the number of our natural gas vehicles here in the U.S. By the end of this year, UPS will have LNG fueling operations across 10 states serving one of the largest LNG truck fleets in the world.

Clearly, we think that this is good for UPS. We also believe that this shift to natural gas in trucking should prove good for the consumer. If trucking is able to reduce its fuel costs, this should over time lower freight and package delivery costs, from what they would otherwise be, to customers across a wide array of products. As most of us know, nearly everything moves by truck.

To the extent that natural gas is used as a transportation fuel, it will create jobs in the domestic natural gas industry to satisfy demand from the transportation sector. Further, engine and truck manufacturers are serving a booming market for alternative fuel vehicles.

The environment is also a big winner here. As I said before, natural gas burns cleaner than diesel or gasoline. EPA’s emission requirements on trucks today make new diesel trucks burn very cleanly. But this is because each truck has very expensive on-board, emissions after-treatment equipment requiring considerable maintenance. We estimate that this equipment and its maintenance on a new heavy diesel truck can cost \$30,000 per truck over its life. A truck burning natural gas alone needs much less of such equipment, if any. We are investigating ways to use natural gas, or fuels made from natural gas, along with diesel fuel in dual-fuel applications to maintain the efficiency and power of the diesel engine, and yet meet the emissions standards of today, but without the complex, expensive, high-maintenance emissions after-treatment equipment. That could improve the

economics of alternative fuel vehicles and accelerate their deployment in the fleet.

Besides our commitment to invest in natural gas vehicles, UPS has sought for years to partner with federal and state governments for incentives for the vehicles themselves and the necessary fueling infrastructure. Such incentives encourage large and small businesses to make the investments. Generally, all our alternative fuel deployments have enjoyed such incentives and they often determine just where we decide to deploy. At the federal level we have recently focused on eliminating disincentives to alternative vehicles, such as the federal excise tax that taxes not just the basic cost of the truck but also the increased cost of the alternative fuel version. We are also asking Congress to fix the disparity in how LNG is taxed compared to petroleum.

The key to all of this has been the surge in U.S. natural gas production. It drove natural gas prices well below oil prices with the expectation that those prices may fluctuate, but will continue to make natural gas an attractive transportation fuel for UPS and other firms like us.

Thank you. I would be pleased to try to answer any of your questions.